

Peterson 18

Serial No. 09/915,963

Claims Listing

- 1 **1.** (Currently amended) An antenna structure comprising:
2
3 at least one antenna element, the at least one antenna element having at least one
4 taper; and
5
6 a symmetrical finite ground plane coupled with the at least one antenna element;
7
8 wherein the at least one antenna element comprises a traveling wave antenna
9 supporting a phase velocity greater than the speed of light.
- 1 **2.** (Canceled) The antenna structure of Claim 1, wherein the at least one antenna
2 element comprises a travelling wave antenna supporting a phase velocity greater than the
3 speed of light.
- 1 **3.** (Original) The antenna structure of Claim 1, wherein the taper comprises a linear
2 profile, a linear constant profile, a broken-linear profile, an exponential profile, an
3 exponential constant profile, a tangential profile, a step-constant profile, or a parabolic
4 profile.
- 1 **4.** (Original) The antenna structure of Claim 1, wherein the antenna structure
2 supports a cigar-like directional three-dimensional beam pattern and a butterfly wing-like
3 directional three-dimensional beam pattern.

*Peterson 18**Serial No. 09/915,963*

- 1 5. (Original) The antenna structure of Claim 1, wherein the at least one antenna
2 element is positioned at an angle from the symmetrical ground plane.
- 1 6. (Previously presented) The antenna structure of Claim 5, wherein the angle is
2 about 90 degrees with respect to the x-, y- and z- axes.
- 1 7. (Original) The antenna structure of Claim 1, wherein the at least one antenna
2 element is coupled with the symmetrical ground plane by means of an unbalanced
3 impedance.
- 1 8. (Original) The antenna structure of Claim 7, wherein the unbalanced impedance
2 comprises a coaxial cable.
- 1 9. (Original) The antenna structure of Claim 7, wherein a first conductor of the
2 unbalanced impedance mechanically couples the at least one antenna element with the
3 symmetrical ground plane.
- 1 10. (Original) The antenna structure of Claim 1, wherein the symmetrical ground
2 plane is disk shaped.
- 1 11. (Currently Amended) An antenna structure comprising:
2
3 an array of at least two antenna elements, each antenna element having at least
4 one taper;

*Peterson 18**Serial No. 09/915,963*

5
6 a symmetrical finite ground plane; and
7
8 an unbalanced impedance for coupling the array of at least two antenna elements
9 with the symmetrical ground plane;
10
11 wherein at least one antenna element of the array comprises a traveling wave
12 antenna supporting a phase velocity greater than the speed of light.

1 12. (Canceled) The antenna structure of Claim 11, wherein at least one antenna
2 element of the array comprises a travelling wave antenna supporting a phase velocity
3 greater than the speed of light.

1 13. (Original) The antenna structure of Claim 11, wherein the taper of at least one
2 antenna element of the array comprises a linear profile, a linear constant profile, a broken-
3 linear profile, an exponential profile, an exponential constant profile, a tangential profile,
4 a step-constant profile, or a parabolic profile.

1 14. (Original) The antenna structure of Claim 11, wherein each antenna element of the
2 array supports a cigar-like directional three-dimensional beam pattern and a butterfly
3 wing-like directional three-dimensional beam pattern.

1 15. (Original) The antenna structure of Claim 11, wherein each antenna element of the
2 array is positioned at an angle from the symmetrical ground plane.

*Peterson 18**Serial No. 09/915,963*

1 **16.** (Previously presented) The antenna structure of Claim 15, wherein the angle for
2 each antenna element is about 90 degrees with respect to the x-, y- and z- axes.

1 **17.** (Original) The antenna structure of Claim 11, wherein the unbalanced impedance
2 comprises a coaxial cable.

1 **18.** (Original) The antenna structure of Claim 17, wherein a first conductor of the
2 unbalanced impedance mechanically couples each antenna element of the array with the
3 symmetrical ground plane.

1 **19.** (Original) The antenna structure of Claim 11, wherein the symmetrical ground
2 plane is disk shaped.

1 **20.** (Original) The antenna structure of Claim 11, further comprising a slow wave
2 antenna to widen the directivity of the antenna structure.

1 **21.** (Currently Amended) An apparatus comprising:

2

3 a transceiver; and

4

5 an antenna structure for radiating or capturing electromagnetic energy from or to
6 the transceiver comprising:

7

8 at least one antenna element having at least one taper, the taper comprising
9 a linear profile, a linear constant profile, a broken-linear profile, an

*Peterson 18**Serial No. 09/915,963*

10 exponential profile, an exponential constant profile, a tangential profile, a
11 step-constant profile, or a parabolic profile;
12
13 a symmetrical disk shaped finite ground plane, the at least one antenna
14 element being positioned at an angle from the symmetrical disk shaped
15 finite ground plane; and
16
17 an unbalanced impedance for coupling the at least one antenna element
18 with the symmetrical disk shaped finite ground plane;
19
20 wherein the at least one antenna element comprises a traveling wave
21 antenna supporting a phase velocity greater than the speed of light.

1 22. (Original) The apparatus of Claim 21, wherein the at least one antenna element
2 supports a cigar-like directional three-dimensional beam pattern and a butterfly wing-like
3 directional three-dimensional beam pattern.

1 23. (Previously presented) The antenna structure of Claim 21, wherein the angle is
2 about 90 degrees with respect to the x-, y- and z- axes.

1 24. (Original) The antenna structure of Claim 21, wherein the unbalanced impedance
2 comprises a coaxial cable.

1 25. (Original) The antenna structure of Claim 21, wherein a first conductor of the
2 unbalanced impedance mechanically couples the at least one antenna element with the
3 symmetrical ground plane.